

**Transforming Undergraduate Education in Science, Technology, Engineering & Mathematics (TUES)   
Course, Curriculum, and Laboratory Improvement (CCLI) / NSF 10-544**

**Program Summary: Full details at:** <http://www.nsf.gov/pubs/2010/nsf10544/nsf10544.htm>

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time): Type 1May 27, 2010States beginning with W.

Subsequent Type 1 proposals: May 27, 2011 and May 28, 2012

Type 2 and 3: Jan 14, 2011, Jan 13, 2012, Jan14, 2013

**Synopsis of Program:**

This solicitation especially encourages projects that have the potential to transform undergraduate STEM education, for example, by bringing about widespread adoption of classroom practices that embody understanding of how students learn most effectively. Thus transferability and dissemination are critical aspects for projects developing instructional materials and methods and should be considered throughout the project's lifetime.  More advanced projects should involve efforts to facilitate adaptation at other sites.

The program supports efforts to create, adapt, and disseminate new learning materials and teaching strategies to reflect advances both in STEM disciplines and in what is known about teaching and learning.  It funds projects that develop faculty expertise, implement educational innovations, assess learning and evaluate innovations, prepare K-12 teachers, or conduct research on STEM teaching and learning. It also supports projects that further the work of the program itself, for example, synthesis and dissemination of findings across the program. The program supports projects representing different stages of development, ranging from small, exploratory investigations to large, comprehensive projects.

**Examples of Type 1 Projects** develops materials that use a new instructional approach based on the current understanding of how students learn, or introduces content from current research into an existing course.

1. A project that integrates new instrumentation or equipment into undergraduate laboratories or field work in a way that demonstrably improves student learning.
2. A collaborative project between faculty from two-year and four-year schools that develops a model to provide the needed courses for a seamless transfer in an efficient way.
3. A pilot project that explores the practical aspects of using remote laboratories or instruction among several institutions.
4. A pilot project that integrates current science and pedagogy into the teacher preparation curriculum.
5. A pilot study to explore Internet-based approaches for faculty professional development.
6. A project that develops an instrument to assess students’ knowledge in a particular area, their abilities with certain processes, or their attitude about some aspect of STEM.
7. A pilot study to begin understanding how various factors affect how students learn particular content or skills.

**Examples of Type 2 Projects** will typically address more than one program component, or, if they focus on a single component, will address it at a scale that goes well beyond a single institution.

1. A project that develops material for a sequence of courses that vertically integrates a conceptual or pedagogical approach at several institutions.
2. A project involving several diverse partnerships between community colleges and four-year schools to develop robust models for providing community college courses needed for a true two-plus-two transfer program.
3. A project that uses faculty professional development as a part of a widespread beta–testing effort with faculty in several diverse institutions in order to disseminate proven, innovative instructional material or approaches.
4. A project that converts an effective, in-person faculty professional development approach to an Internet-based or blended approach in order to improve accessibility and sustainability.
5. A project involving several diverse institutions that uses an existing instrument to assess students’ knowledge in a particular area or their abilities with certain processes.
6. A study involving several diverse institutions to identify what factors and characteristics effect how faculty members and departments adopt innovative approaches.

**Examples of Type 3 Projects -** are intended to support large scale efforts. Projects that continue from previous work should include an explicit discussion of the results and impact produced by that work.

1. A project that involves a regional or national effort to disseminate proven materials or pedagogies.
2. A project that develops a self-sustaining model for faculty professional development that introduces new faculty to a field or provides retraining for experienced faculty.
3. A national or regional level project involving a wide range of diverse institutions that uses an existing assessment instrument to develop a database on students’ knowledge in a particular area or their abilities with certain processes.
4. A study involving a broad range of diverse institutions that explores how various factors affect how students learn particular content or skills.
5. A study involving a broad range of diverse institutions that systematically compares the efficacy and efficiency of several instructional methodologies such as hands-on, remote, and virtual laboratories.

See link at top of page for TUES Project samples.

* **Anticipated Type of Award:**  Standard Grant or Continuing Grant or Cooperative Agreement
* **Estimated Number of Awards:**    94 to  108   including 70 to 75 Type 1 awards, 20 to 25 Type 2 awards, 3 to 5 Type 3 awards and 1 to 3 TUES Central Resource Project awards
* **Anticipated Funding Amount:**   $35,800,000 through this solicitation for new and ongoing awards, pending availability of funding. The total budget for Type 1 may not exceed $200K ($250K when 4-year colleges and universities collaborate with 2-year colleges) For Type 2 the budget is $300 to $600K. And type 3 budget is $1 to $5M, plus **TUES Central Resource Projects** have a budget of 100K – 3M